U.S. Environmental Protection Agency

Ravenswood PCE Superfund Site

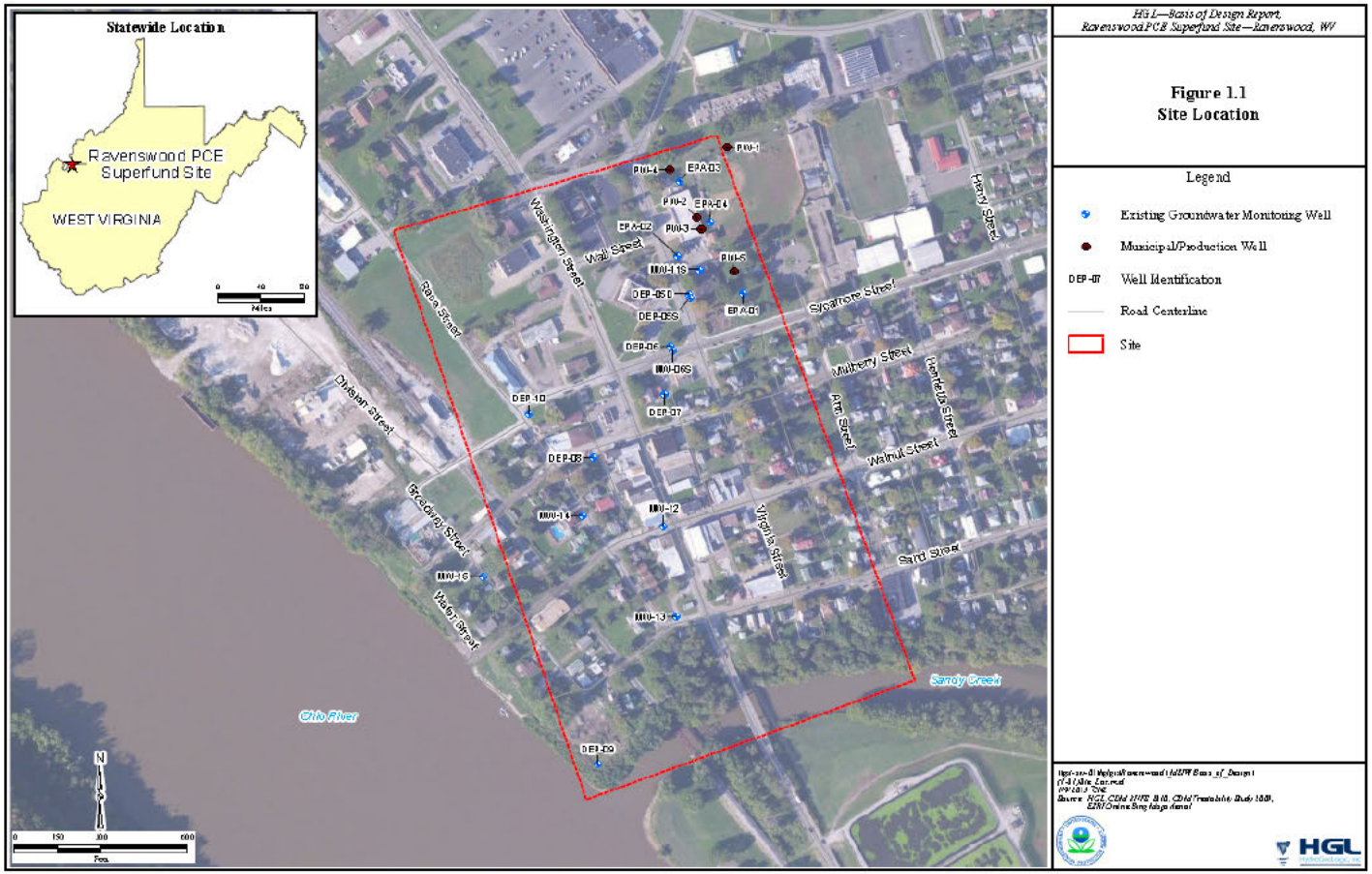
Priority Panel

March, 2013

Anthony C. Iacobone

Remedial Project Manager – Region 3

Ravenswood Site Map



Ravenswood PCE Superfund Site

- History
  - PCE contamination discovered in municipal production wells in 1989
  - Contamination from 3 possible sources.
  - Exemption 5: AC/AWP

Ravenswood PCE Superfund Site

- Removal Action
  - Installation of two new production wells
  - Completed August 2004
  - Wells were installed to compensate for reduced pumping capacity.

Ravenswood PCE Superfund Site

- Remedial Investigation (RI)
  - Began in 2007
  - Included a Treatability Study to test AS/SVE.
    - 9 Air Sparging wells
    - 3 Soil Vapor extraction wells
    - A portable AS/SVE unit system was moved from the Vienna PCE Site for this study.
    - System became operational in June 2009.

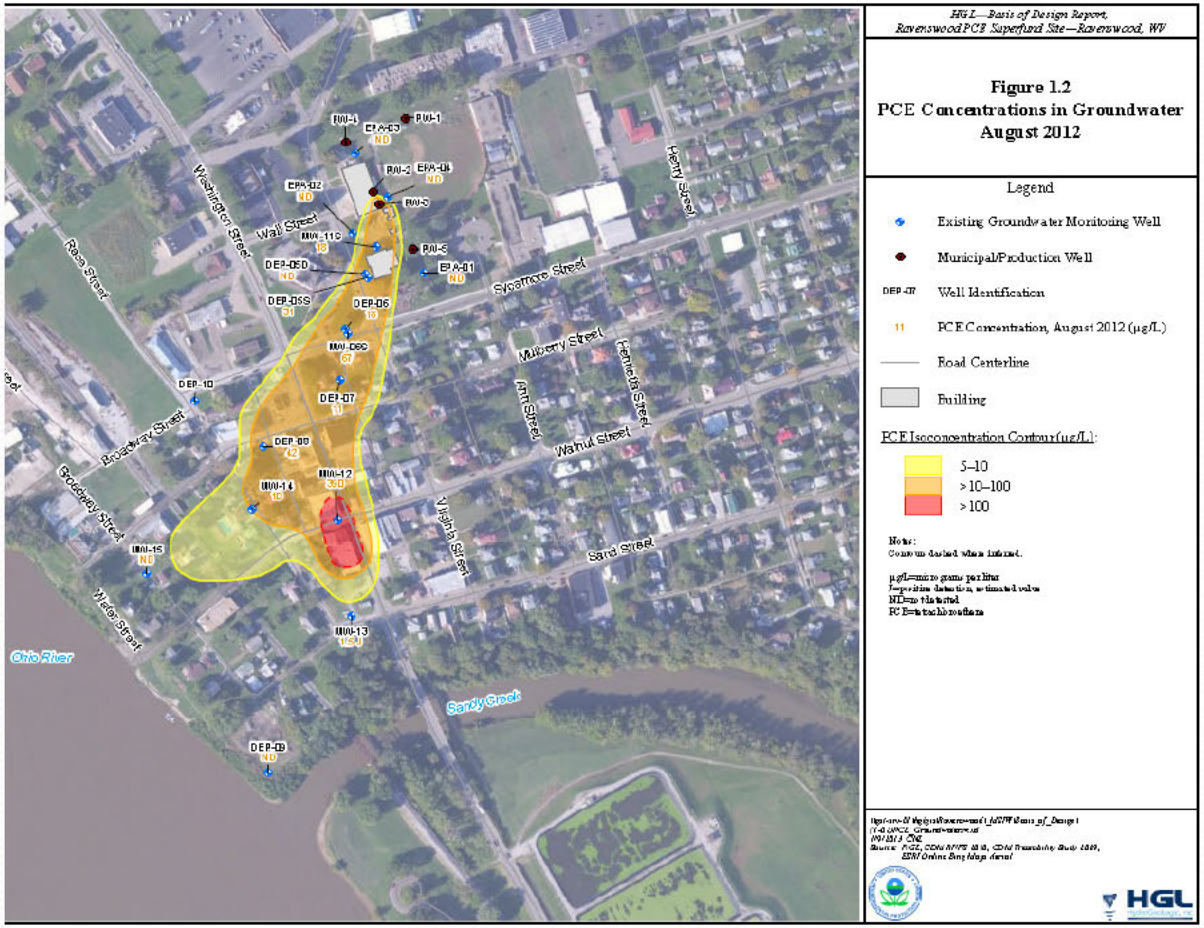
Issues

- Groundwater contamination is being pulled towards the production wells

- Ravenswood supplies water for the neighboring municipalities as well as the city itself (app 6,000 citizens)

- Currently, contaminated water is run through a air stripper and then blended to ensure production water is below MCLs.

- Air Stripper is aging and beyond it's design lifespan.



PCE has been consistently detected in production wells;

Table 5-2
Volatile Organic Compounds Detected in Public Supply Wells

Sample Location:				PW2	PW2	PW2	PW2	PW3	PW3	PW3	PW3	PW3	PW4
Sample Date:				2/2/10	2/17/10	3/4/10	3/17/10	8/31/07	12/3/08	10/1/09	11/23/09	1/6/10	5/8/07
Analyte	CRQL	RSL (µg/L)	MCL (µg/L)										
Bromomethane	0.5	8.7		R								0.96 J	
Acetone	5	22000		R			R	R	R	R		R	R
Carbon Disulfide	0.5	1000											
Methylacetate	0.5	37000					R						
Methylene chloride	0.5	4.8	5										
cis-1,2-Dichloroethene	0.5	370	70						0.16 J				
2-Butanone	5	7100		R		R	R	R					
Chloroform	0.5	0.019											
Cyclohexane	0.5	13000											
Carbon tetrachloride	0.5	0.2	5										
Methylcyclohexane	0.5												
Bromodichloromethane	0.5	0.12											
Tetrachloroethene	0.5	0.11	5	**1.9**	**3.5 J**	**3.4**	**5 L**	**30**	**24 J**	**14**	**28**	**29**	
2-Hexanone	5	47											
Dibromochloromethane	0.5	0.15											
Bromoform	0.5	8.5											

Notes:

All results are in microgram per liter (µg/L)

Blank cells indicate analyte not detected or detected in associated blank sample.

Blend = Drinking water in distribution system

Bold values = MCL or RSL exceeded

CRQL - contract required quantitation limit

MCL - maximum contaminant level, December 2009.

RSL - Regional Screening Level - May 2010

STRIPPEREFF = Air stripper effluent

STRIPPERINF = Air stripper influent

Data Qualifiers:

J - Analyte Present. Reported value may not be accurate or precise.

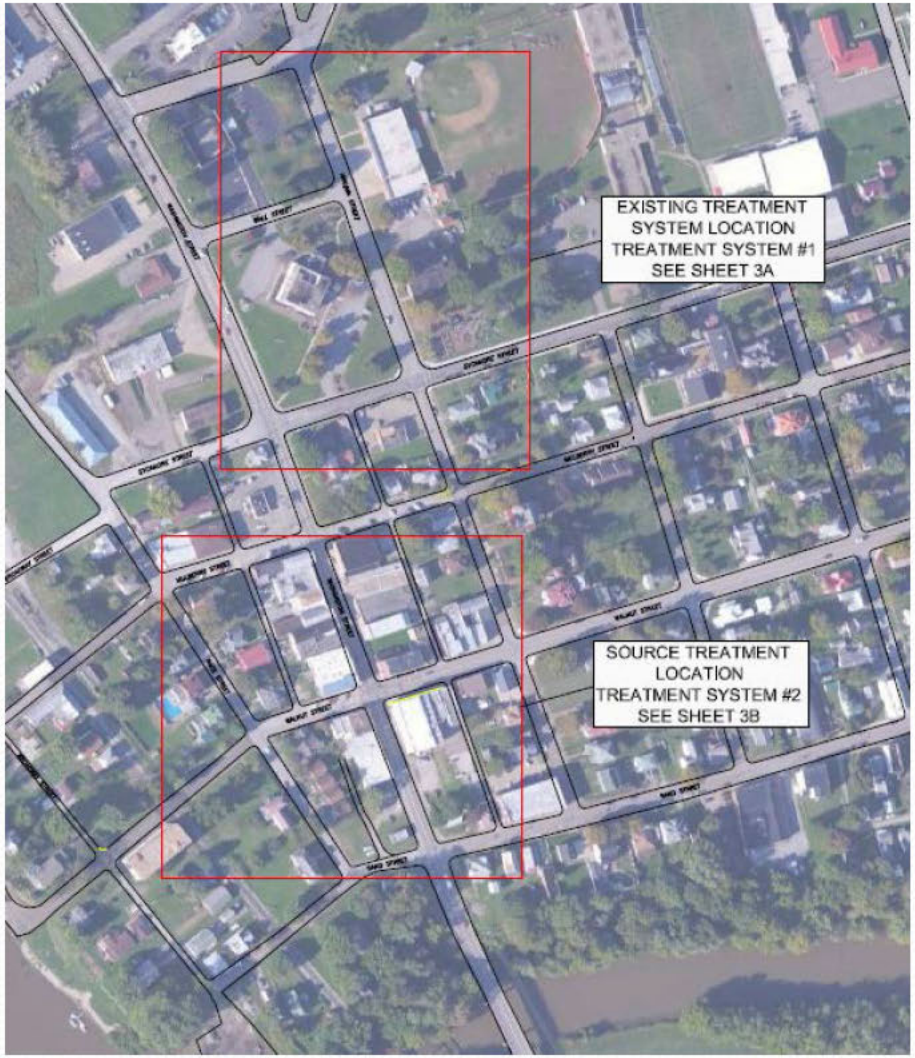
L - Analyte present. Reported value may be biased low. Actual value is expected to be higher.

R - Rejected result. Analyte may or may not be present in sample.

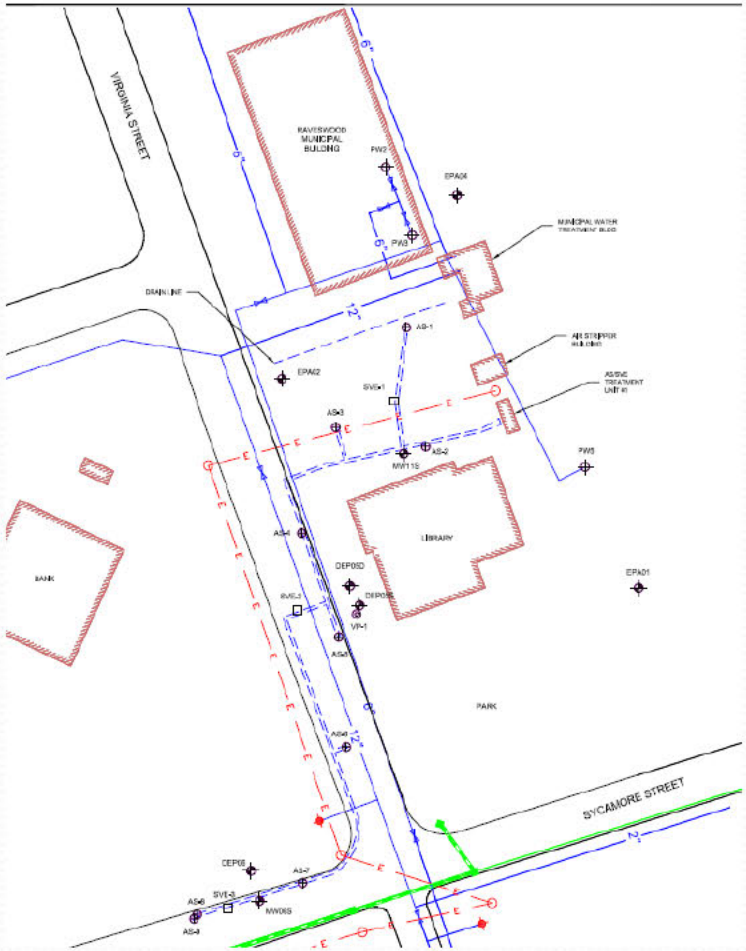
Selected Remedy ROD 2011

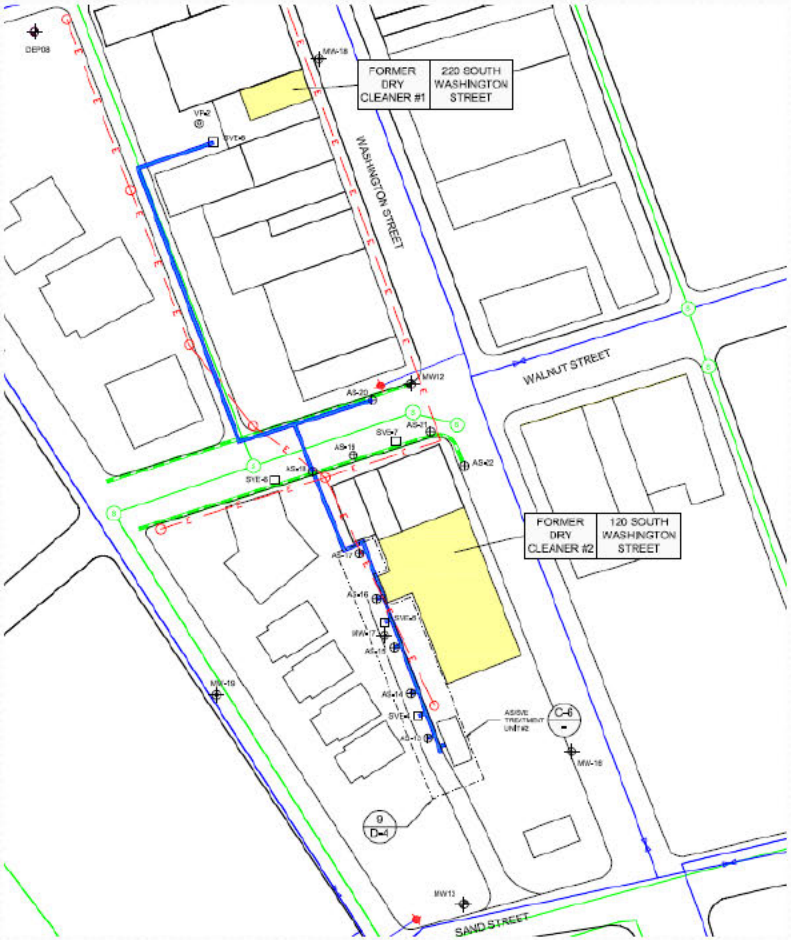
- In Situ AS/SVE
  - Modification of the treatability study and installation of a new AS/AVE.
  - Estimated Construction Costs of Remedial Action are $800,000.
  - Total costs including 10 years of O&M are $2,250,000.00
- Groundwater and Vapor Monitoring
- Wellhead Treatment of City Production Wells.
- Institutional Controls

Two distinct source areas, One combined plume



Existing treatment system on the left, New expanded system on the right.





Ravenswood PCE Site

Risks

- **Groundwater**
  - Plume moving towards production wells.
  - Current/Future risk from ingestion and dermal route for noncancer hazards
  - Current/Future risk from ingestion, dermal and inhalation routes for cancer hazards
- Groundwater (Ecological)
  - Loss of plume control increases ecological risk to Ohio Rive and Sandy Creek

Ravenswood RA Considerations

- Ravenswood supplies drinking water for 6,000 citizens.
- Venturi Air stripper is an older design, past its design life and likely to fail.
- Production wells supply plume control, if the wells are shut down;
  - 6,000 residents lose water.
  - Ravenswood loses a primary revenue source.
  - Ecological risk increases.
  - Remedy becomes much more difficult and expensive as a plume control mechanism would be needed.

Ravenswood RA Considerations Continued

- Remedy requires a minimal financial investment of $800,000
- Construction Completion is scheduled for fiscal 2013.